Titl : Robust System For Transmitting and Receiving Map Data
Inventor: W. Bretl et al.
Dock t No.: 7204 CIP4   Serial No: 10/663,953   Page 1 of 12
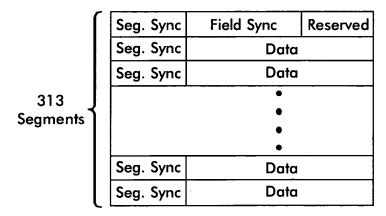
Seg. Sync	Field Sync	Reserved
Seg. Sync	Data	
Seg. Sync	Data	
	• • • •	
Seg. Sync	Data	
Seg. Sync	Data	

313 Segments

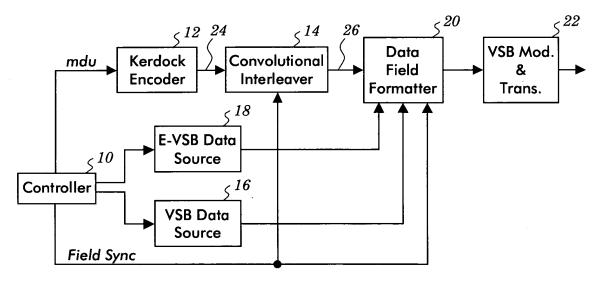**Figure 1**

Figure 2

Titl : Robust Syst m For Transmitting and Rec iving Map Data
Inventor: W. Bretl t al.
Dock t No.: 7204 CIP4   Serial No: 10/663,953   Pag 2 of 12

Figure 3

Figure 5

Title: Robust Syst m For Transmitting and R c iving Map Data
Inventor: W. Bretl t al.
Docket No.: 7204 CIP4   Serial No: 10/663,953   Page 3 of 12
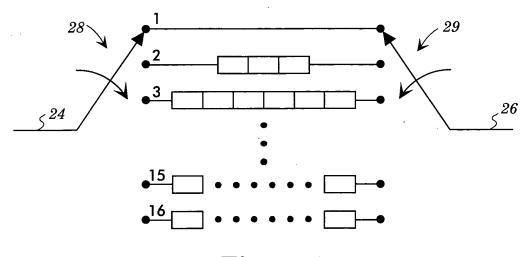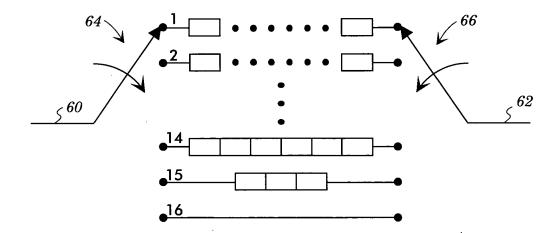
Figure 4

Figure 6

Figure 7

Title: Robust System For Transmitting and R ceiving Map Data
Inv ntor: W. Bretl et al.
Dock t No.: 7204 CIP4   S rial No: 10/663,953   Page 4 of 12

16
element
vector

256
Correlations

_84_

Identify Max
Correlation

_88_

First 8 bits of
identified vector

256/16
LUT

_86_

Figure 8

16
element
vector

256
Correlations

_92_

_90_

Identify Max
Correlation

_98_

First 8 bits of
identified vector

0-255
Sequence
Generator

_94_

256/8
LUT

_96_

8

8

8

Figure 9
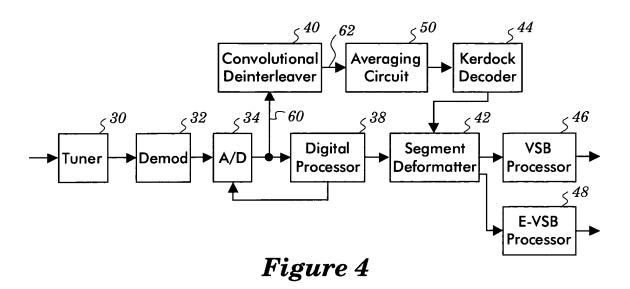
Titl : Robust System For Transmitting and R c iving Map Data
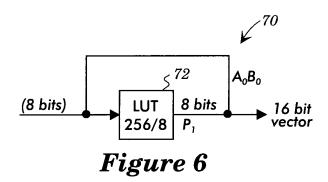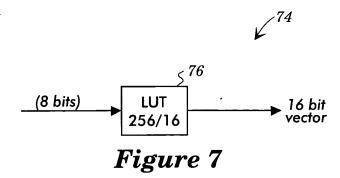Inv ntor: W. Bretl t al.
Docket No.: 7204 CIP4   Serial No: 10/663,953   Page 5 of 12

Figure 10

Title: Robust Syst m For Transmitting and Rec iving Map Data
Inventor: W. Br tl t al.
Dock t No.: 7204 CIP4   Serial No: 10/663,953   Pag 6 of 12

Enter

200 Receive Field

B

202 Parse for Map Data

204 De-Interleave

206 Store

208 Full Map Data Unit ?

No

Yes

A

Figure 11A

A

210 Odd/Even ?

Odd

212 Store Map Data Unit

B

Even

214 Average with Previous Map Data Unit

216 Decode

218 Compute Reliability

220 Store Map Data Unit and Reliability Together

222 Reliable ?

No

226 Retrieve Previous Map Data Unit

Yes

224 De-Format Field According to Map Data Unit

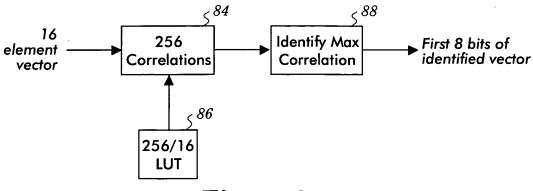228 De-Format At Field According to Previous Map Data Unit

Figure 11B
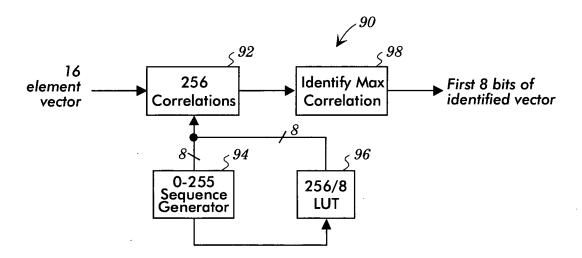
Titl : Robust Syst m For Transmitting and R c iving Map Data
Inv ntor: W. Bretl t al.
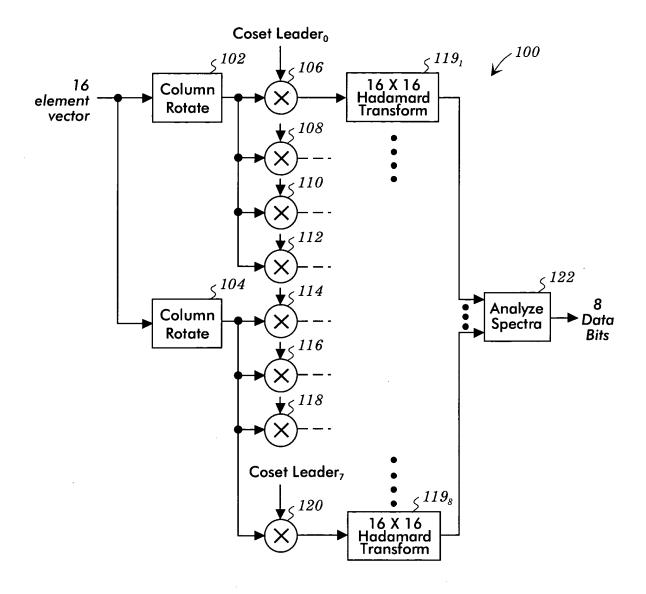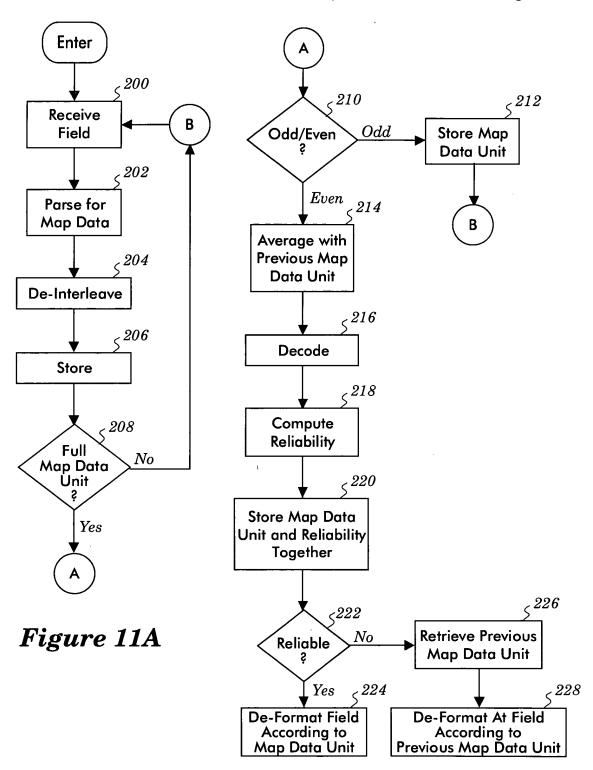Docket No.: 7204 CIP4   Serial No: 10/663,953   Page 7 of 12

mdu → Kerdock Encoder *12* → *24* Scrambler *300* → Convolutional Interleaver *14* → *26* Data Field Formatter *20* → VSB Mod. & Trans. *22* →

Controller *10* → E-VSB Data Source *18*

Controller *10* → VSB Data Source *16*

Field Sync

Figure 12

Convolutional Deinterleaver *40* → *62* Descrambler *310* → Averaging Circuit *50* → Kerdock Decoder *44*

→ Tuner *30* → Demod *32* → A/D *34* → *60* Digital Processor *38* → Segment Deformatter *42* → VSB Processor *46* →

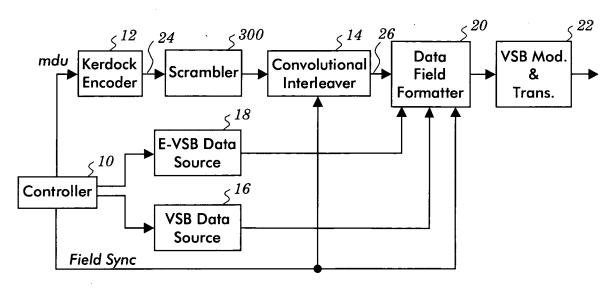E-VSB Processor *48* →

Figure 13

Titl : Robust Syst m For Transmitting and R ceiving Map Data
Inv ntor: W. Br tl t al.
Dock t No.: 7204 CIP4   Serial No: 10/663,953   Page 8 of 12

Figure 14

Figure 15

Title: Robust Syst m For Transmitting and R c iving Map Data
Inventor: W. Bretl et al.
Docket No.: 7204 CIP4   Serial No: 10/663,953   Page 9 of 12
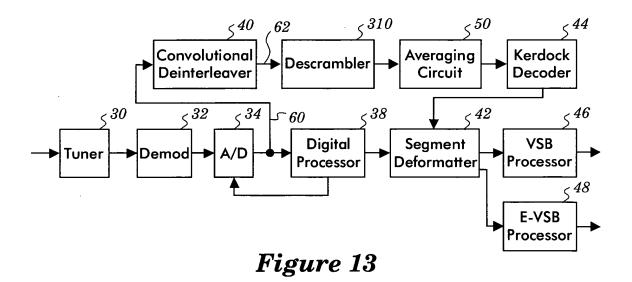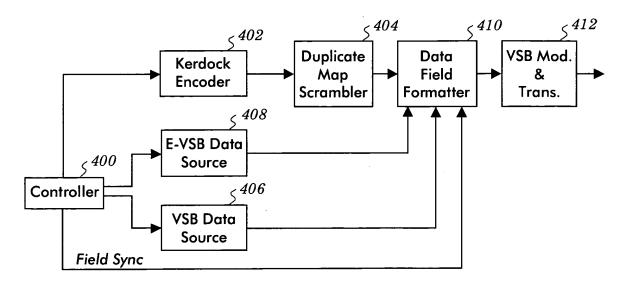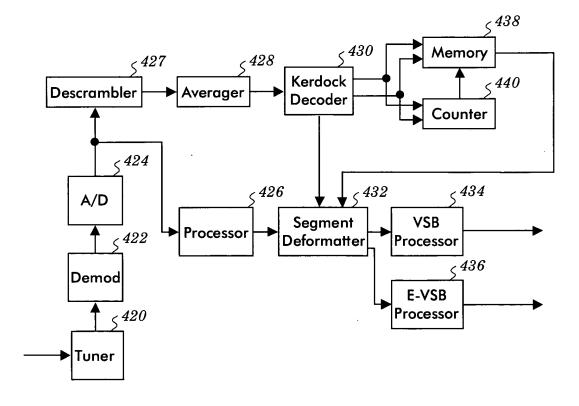
_450_

(12 bits) → | 4096/64 LUT _452_ | → 64 bit Vector

Figure 16

_454_

64 bit Vector → | 4096 Correlations _456_ | → | Identify Max Correlation _460_ | → Out 12 bits

| 4096/64 LUT _458_ |

Figure 17

_470_

12 bits → | 4096/64 LUT _472_ | _474_ _480_ _478_ _482_ → 64 bit Vectors

_476_

Figure 18

Title: Robust Syst m For Transmitting and R c iving Map Data
Inv ntor: W. Bretl et al.
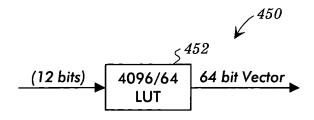Dock t No.: 7204 CIP4   Serial No: 10/663,953   Page 10 of 12

490

506

4096/64
LUT

492   *498*

496

502

504

508

500

Combiner

4096
Correlations

Identify
Maximum
Correlation

494

510

Store

Figure 19

602

Kerdock
Encoder

608

1/4 E-VSB
Data Source

610

600

604

612

1/2 E-VSB
Data Source

Controller

Data
Field
Formatter

VSB Mod.
&
Trans.

606

VSB Data
Source

Field Sync

Figure 20

Title: Robust System For Transmitting and R ceiving Map Data
Inv ntor: W. Bretl et al.
Dock t No.: 7204 CIP4   Serial No: 10/663,953   Page 11 of 12
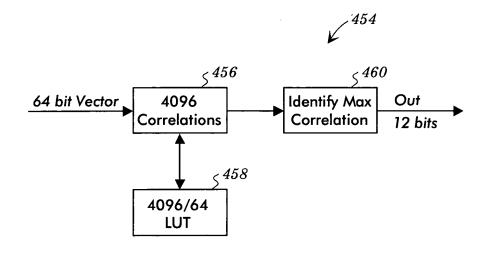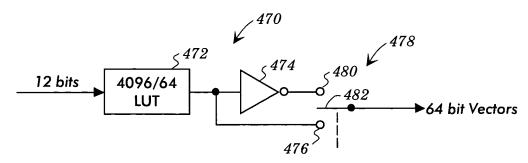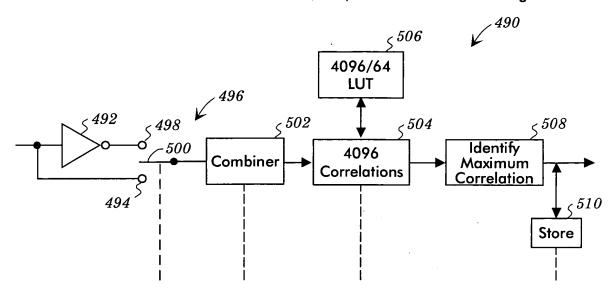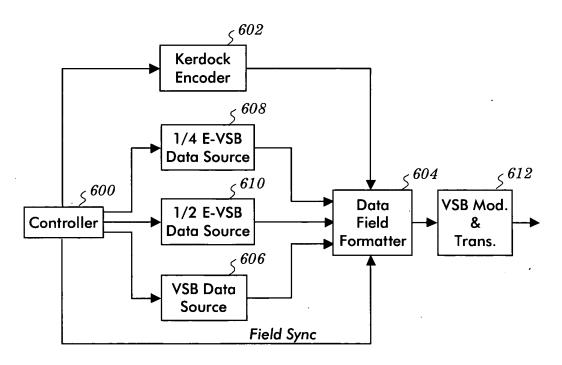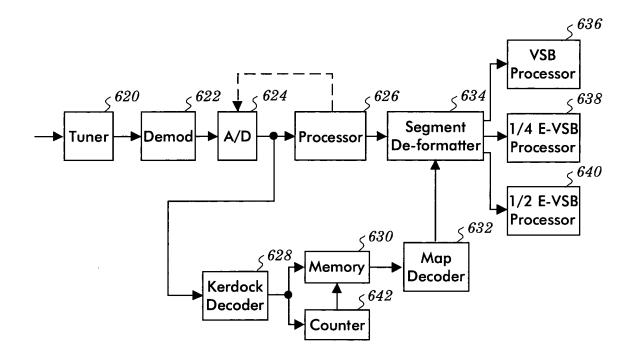
Figure 21

1/4 Rate ⟶

		0	4	8	12	16	20	24 ...	292	296	300	304	308	312
1/2	0	0	4	8	12	16	20	24	292	296	300	304	308	312
Rate	2	2	6	10	14	18	22	26	294	298	302	306	310	314
	4	4	8	12	16	20	24	28	296	300	304	308	312	316
	6	6	10	14	18	22	26	30	298	302	306	310	314	318
	8	8	12	16	20	24	28	32	300	304	308	312	316	320
	10	10	14	18	22	26	30	34	302	306	310	314	318	322
	12	12	16	20	24	28	32	36	304	308	312	316	320	324
	14	14	18	22	26	30	34	38	306	310	314	318	322	326
	16	16	20	24	28	32	36	40	308	312	316	320	324	328
	18	18	22	26	30	34	38	42	310	314	318	322	326	330
	⋮													
	288	288	292	296	300	304	308	312	580	584	588	592	596	600
	290	290	294	298	302	306	310	314	582	586	590	594	598	602
	292	292	296	300	304	308	312	316	584	588	592	596	600	604
	294	294	298	302	306	310	314	318	586	590	594	598	602	606
	296	296	300	304	308	312	316	320	588	592	596	600	604	608
	298	298	302	306	310	314	318	322	590	594	598	602	606	610
	300	300	304	308	312	316	320	324	592	596	600	604	608	612
	302	302	306	310	314	318	322	326	594	598	602	606	610	614
	304	304	308	312	316	320	324	328	596	600	604	608	612	616
	306	306	310	314	318	322	326	330	598	602	606	610	614	618
	308	308	312	316	320	324	328	332	600	604	608	612	616	620
	310	310	314	318	322	326	330	334	602	606	610	614	618	622
	312	312	316	320	324	328	332	336	604	608	612	616	620	624

Figure 22